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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Purva R. Rajkotia
U.S. Serial No.:	10/028,571
Filed:	December 20, 2001
For:	SYSTEM AND METHOD FOR LOCATING A MOBILE STATION IN A WIRELESS NETWORK
Group No.:	2687
Examiner:	Eliseo Ramos-Feliciano

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Commissioner for Patents
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Sir:

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AMENDED APPEAL BRIEF AND REMARKS

Sir:

Responsive to the Notification of Non-Compliant Appeal Brief mailed May 16, 2006, Applicants respectfully submit this Amended Appeal Brief and Remarks. Applicants believe this submission to be fully responsive and compliant.

Applicants herewith respectfully submit that the Examiner's decision of July 12, 2005, finally rejecting Claims 31-60 in the present application, should be reversed, in view of the following arguments and authorities. This Brief is submitted on behalf of Appellant for the application identified above. Please charge any fees to Deposit Account No. 50-0208.

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TABLE OF AUTHORITIES

ACS Hospital Systems v. Montefiore Hospital, 220 U.S.P.Q. 929 (Fed. Cir. 1984). 5

Graham v. John Deere Co., 383 U.S. 1, 148 U.S.P.Q. 459 (1966). 5

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Real Party in Interest

The real party in interest, and assignee of this case, is Samsung Electronics Co., Ltd.

Related Appeals or Interferences

To the best knowledge and belief of the undersigned attorney, there are none.

Status of Claims

Claims 1-30 have been canceled, in Applicants' amendment dated Feb. 2, 2005. Claims 31-60 are under final rejection, and are each appealed. The claims as currently written are included in the Claims Appendix (Appendix A).

Status of Amendments after Final

No amendments to the claims were entered after final rejection.

SUMMARY OF CLAIMED SUBJECT MATTER

The following summary refers to disclosed embodiments and their advantages, but does not delimit any of the claimed inventions.

In General

The present application is directed, in general, to a system and method for locating a mobile station (*A*) in a wireless network (**500**). A distance unit (**260**), associated with a base station (**510**), utilizes a random backoff parameter of the mobile station to determine distance between the base station and the mobile station. The distance unit determines a one way travel time of a range signal from the base station to the mobile station, and multiplies the one way travel time by the speed of light in order to obtain the distance from the base station to the mobile station. The one way travel time is obtained from one half the value of a quantity that is equal to a two way travel time of a range signal minus a time value of a random backoff parameter of the mobile station (***Eq. 1***). *Abstract;*

page 17, line 4 - page 18, line 15; page 19, line 13 - page 21, line 16; page 26, line 7 - page 29, line 8; Figures 5 and 6.

Support for Independent Claims

Note that, per 37 CFR §41.37, only each of the independent claims are discussed in this section. In the arguments below, however, the dependent claims are also discussed and distinguished from the prior art. The discussion of the claims is for illustrative purposes, and is not intended to effect the scope of the claims.

Independent Claim 31

Independent Claim 31 describes an apparatus for determining a distance from a base station to a mobile station, for use in a wireless network communications system comprising a plurality of base stations and a plurality of mobile stations. *Page 5, line 4 - page 6, line 17; page 11, line 11 - page 12, line 5; page 26, line 7 - page 28, line 4; Figure 4; Figure 5.*

The apparatus comprises a distance unit, associated with the base station. *Page 15, line 12 - page 17, line 5; page 24, lines 11 - 13; page 26, lines 7 - 18; Figure 2; Figure 4; Figure 5.*

The distance unit is capable of: obtaining a two way travel time - which is a time of travel for a range signal to travel from the base station to the mobile station, and to travel from the mobile station to the base station; adjusting a value of the two way travel time, to correct for signal conditions causing a time difference in the arrival of the range signal at the base station; determining a one way travel time D from

$$D = \tfrac{1}{2}\,[(\text{adjusted two way travel time}) - (\text{random backoff})],$$

wherein said random backoff is a time value of a chip length of a random backoff parameter of the mobile station; and multiplying the one way travel time D by the speed of light to obtain the distance from the base station to the mobile station. *Page 17, line 4 - page 21, line 16; page 28, line 5 - page 29, line 8; Figure 2; Figure 6.*

Independent Claim 38

Independent Claim 38 describes a wireless network communications system, comprising a base station and a mobile station, the base station having an apparatus for determining a distance from the base station to the mobile station. *Page 5, line 4 - page 6, line 17; page 11, line 11 - page 12, line 5; page 26, line 7 - page 28, line 4; Figure 4; Figure 5.*

The apparatus comprises a distance unit, associated with the base station. *Page 15, line 12 - page 17, line 5; page 24, lines 11 - 13; page 26, lines 7 - 18; Figure 2; Figure 4; Figure 5.*

The distance unit is capable of: obtaining a two way travel time - which is a time of travel for a range signal to travel from the base station to the mobile station, and to travel from the mobile station to the base station; adjusting a value of the two way travel time, to correct for signal conditions causing a time difference in the arrival of the range signal at the base station; determining a one way travel time D from

$$D = \tfrac{1}{2}\,[(\text{adjusted two way travel time}) - (\text{random backoff})],$$

wherein said random backoff is a time value of a chip length of a random backoff parameter of the mobile station; and multiplying the one way travel time D by the speed of light to obtain the distance from the base station to the mobile station. *Page 17, line 4 - page 21, line 16; page 28, line 5 - page 29, line 8; Figure 2; Figure 6.*

Independent Claim 45

Independent Claim 45 describes - for use in a wireless network communications system comprising a base station and a mobile station - a method of determining a distance from the base station to the mobile station. *Page 5, line 4 - page 6, line 17; page 11, line 11 - page 12, line 5; page 26, line 7 - page 28, line 4; Figure 4; Figure 5.*

A distance unit, associated with the base station, obtains a two way travel time - which is a time of travel for a range signal to travel from the base station to the mobile station, and to travel from the mobile station to the base station. *Page 15, line 12 - page 17, line 14; page 28, lines 12 - 20; Figure 2; Figure 6.*

The value of the two way travel time is adjusted to correct for signal conditions causing a time difference in the arrival of the range signal at the base station; a one way travel time D is determined from

D = ½ [(adjusted two way travel time) - (random backoff)],

wherein said random backoff is a time value of a chip length of a random backoff parameter of the mobile station; and the one way travel time D is multiplied by the speed of light to obtain the distance from the base station to the mobile station. *Page 15, line 12 - page 21, line 16; page 24, lines 11 - 13; page 26, lines 7 - 18; page 28, line 5 - page 29, line 8; Figure 2; Figures 4 - 6.*

Independent Claim 53

Independent Claim 53 describes - for use in a wireless network communications system comprising a plurality of base stations and a plurality of mobile stations - a method of locating a mobile station in a area between three base stations. *Page 5, line 4 - page 6, line 17; page 11, line 11 - page 12, line 5; page 24, line 11 - page 28, line 4; Figure 4; Figure 5.*

A distance unit, associated with each base station, obtains a two way travel time - which is a time of travel for a range signal to travel from each respective base station to the mobile station, and to travel from the mobile station to each respective base station. *Page 15, line 12 - page 17, line 14; page 28, lines 12 - 20; Figure 2; Figure 6.*

The value of each respective two way travel time is adjusted to correct for signal conditions causing a time difference in the arrival of the range signal at each respective base station; a one way travel time D from each respective base station to the mobile station is calculated as

D = ½ [(adjusted two way travel time) - (random backoff)],

wherein said random backoff is a time value of a chip length of a random backoff parameter of the mobile station; and each one way travel time D is multiplied by the speed of light to obtain the distance from each respective base station to the mobile station. *Page 15, line 12 - page 21, line 16; page 24, lines 11 - 13; page 26, lines 7 - 18; page 28, line 5 - page 29, line 8; Figure 2; Figures 4 - 6.*

A location of the mobile station within the area between the three base stations is identified using the respective distances of the mobile station from the three base stations. *Page 24, line 11 - page 28, line 4; Figures 4 and 5.*

Independent Claim 56

Independent Claim 56 describes an apparatus for locating a mobile station in an area between three base stations, for use in a wireless network communications system comprising a plurality of base stations and a plurality of mobile stations. *Page 5, line 4 - page 6, line 17; page 11, line 11 - page 12, line 5; page 24, line 11 - page 28, line 4; Figure 4; Figure 5.*

The apparatus comprises a distance unit, associated with each of the three base stations. *Page 15, line 12 - page 17, line 5; page 24, lines 11 - 13; page 26, lines 7 - 18; Figure 2; Figure 4; Figure 5.*

The distance unit is capable of: obtaining a two way travel time - which is a time of travel for a range signal to travel from each respective base station to the mobile station, and to travel from the mobile station to each respective base station; adjusting a value of each respective two way travel time, to correct for signal conditions causing a time difference in the arrival of each range signal at each respective base station; determining a one way travel time D from each respective base station to the mobile station by

$$D = \tfrac{1}{2}\,[(\text{adjusted two way travel time}) - (\text{random backoff})],$$

wherein said random backoff is a time value of a chip length of a random backoff parameter of the mobile station; and multiplying each respective one way travel time D by the speed of light to obtain the distance from each respective base station to the mobile station. *Page 15, line 12 - page 21, line 16; page 24, lines 11 - 13; page 26, lines 7 - 18; page 28, line 5 - page 29, line 8; Figure 2; Figures 4 - 6.*

A location of the mobile station within the area between the three base stations is identified using the respective distances of the mobile station from the three base stations. *Page 24, line 11 - page 28, line 4; Figures 4 and 5.*

Grounds of Rejection to be Reviewed on Appeal

1. Are Claims 31-60 obvious over U.S. Patent No. 6,061,565 to Innes, *et al.*("Innes") in view of the Admitted Prior Art, and further in view of U.S. Patent No. 6,489,923 to Bevan, *et al.*, ("Bevan")?

ARGUMENT

Stated Grounds of Rejection

The rejections outstanding against the Claims are as follows:

In Sections 1 and 2 of the July 12, 2005, Office Action, the Examiner rejected Claims 31-60 under 35 U.S.C. §103(a) as being unpatentable over the United States Patent No. 6,061,565 to Innes, *et al.* (hereafter, simply "Innes") in view of the Admitted Prior Art in further view of United States Patent No. 6,489,923 to Bevan *et al.* (hereafter, simply "Bevan").

Legal Standards

The legal standards for an obviousness[1] rejection are referenced in the footnotes below.

Analysis of Examiner's Rejection

The cited references are each briefly discussed in relevant part, and then the rejection of each claim is addressed separately under each ground of rejection.

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[1] The Supreme Court has explained how to apply §103:

> Under §103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined.
>
> *Graham v. John Deere Co.*, 383 U.S. 1, 148 U.S.P.Q. 459, 467 (1966).

Obviousness cannot be inferred from a combination of references without a showing that one of ordinary skill would have been motivated to combine those references:

> When prior art references require selective combination ... to render obvious a subsequent invention, there must be some reason for the combination other than the hindsight gained from the invention itself.... Something in the prior art as a whole must suggest the desirability, and thus the obviousness, of making the combination.
>
> *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 5 U.S.P.Q.2d 1434, 1438 (Fed.Cir. 1988), *quoting Interconnect Planning Corp. v. Feil*, 227 U.S.P.Q. 543 (Fed.Cir. 1985), *and Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick*, 221 U.S.P.Q. 481 (Fed.Cir. 1984).

> Where an obviousness rejection is based on a combination of references, the Examiner must show that one of ordinary skill would have been motivated to combine those references.
>
> *See In re Nilssen*, 7 USPQ2d 1500 (Fed.Cir. 1988); *Panduit Corp. v. Dennison Mfg. Co.*, 1 USPQ2d 1593, 1597 (Fed.Cir. 1987); *ACS Hospital Systems v. Montefiore Hospital*, 220 USPQ 929 (Fed.Cir. 1984).
>
> While *[a reference]* may be capable of being modified to run the way *[the applicant's]* apparatus is claimed, there must be a suggestion or motivation in the reference to do so. See In re Gordon, 733 F.2d 900, 902, 221 USPQ 1125, 1127 (Fed. Cir. 1984) ("The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification.").
>
> *In re Mills,* 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed.Cir. 1990).

Innes is drawn to a position location system for locating a mobile station in a mobile radio system by: calculating a first distance between the mobile station and a first base station of the mobile radio system; calculating a second distance between the mobile station and a first base station of the mobile radio system; and calculating the position of the mobile station using the first and second calculated distances and known positions of the first and second base stations (i.e., triangulation). Properties of signal transmissions - i.e., signal delays - between the mobile station and the first and second base stations are used to determine the approximate distance between the mobile station and each respective base station. Position location can be carried out at any time when the mobile station is within range of at least two base stations. As such, Innes does have some functional similarities to the present application. However, Innes does not include a number of claimed elements and functions, as described in detail below, and does not provide suggestion or motivation to spontaneously and speculatively prompt the creation or addition of those elements or functions.

The **"Admitted Prior Art"** refers to the disclosure in Applicants' original application that the "randombackoff" parameter used in Equation 1 is specified in the IS-95 Code Division Multiple Access (CDMA) standard for CDMA networks (the "Standard"). As specified in the Standard, the random backoff parameter is calculated from the equation:

$$\text{Random Backoff} = 2^{\text{PNRAN}} - 1;$$

where PNRAN is a pseudo noise random number having a value from zero (0) to nine (9). When PNRAN equals zero (0), the random backoff parameter equals zero (0). When PNRAN equals nine (9), the random backoff parameter equals five hundred eleven (511). The random backoff parameter of a mobile station represents the time offset after which that mobile station starts a transmission. The random backoff parameter of a mobile station is proportional to the distance of that mobile station from a base station. A mobile station continually informs a base station of the current value of the random backoff parameter for that mobile station.

Bevan is drawn to a position location system for estimating, with respect to a base station or cellsite, the direction and range of a mobile station. The system estimates a bearing angle from a base station or cellsite to a mobile station using a direction finding antenna coupled to a receiver circuit located at the base station or cell site. Also disclosed are methods and apparatus for calibrating the direction finding antenna and the receiver circuit. While Bevan shares some functional similarities with the present application, it does not include a number of claimed elements and functions, as described in detail below.

Ground of Rejection 1: Claims 31-60 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,061,565 to Innes, *et al.*("Innes") in view of the Admitted Prior Art, and further in view of U.S. Patent No. 6,489,923 to Bevan, *et al.*, ("Bevan").

These claims are allowable over this combination of references, as discussed below.

Claim 31

Claim 31 requires, among other limitations, a base station distance unit capable of obtaining a two way travel time - a time of travel for a range signal to travel from a base station to a mobile station and to travel from the mobile station to the base station. The distance unit adjusts a value of the two way travel time to correct for signal conditions causing a time difference in arrival of the range signal at the base station. The distance unit determines a one way travel time *D* by subtracting a random backoff parameter from the adjusted two way travel time, and dividing that result by 2. The distance unit multiplies the one way travel time *D* by the speed of light to obtain the distance between the base station and mobile station.

Applicants respectfully submit that - absent a highly selective and speculative hindsight reconstruction - the cited references do not to teach or suggest, alone or in proper combination, a base station distance unit having all the required elements of Claim 31.

The Examiner suggests "MMSU 36 and/or PLC 38" suffices as the distance unit required by Claim 31. Applicants respectfully traverse the Examiner's interpretation of Innes.

Applicants find that Innes discloses one or more message monitoring and substitution units (MMSUs) 36, placed in the Abis interface 28 between each BTS 26 and its BSC 24. *Col. 4, lines 45-47; Fig. 4.* Innes discloses a separate position location controller ("PLC") 38 that controls the MMSUs 36. *Col. 4, lines 47-48; Fig. 4.* The PLC 38 and MMSUs 36 may be integrated with, or separate from, the base transceiver station (BTS) 26 and base station controller (BSC) 24 components. *Col. 4, lines 48-50; Fig. 4.*

Importantly, the MMSUs 36 collect the distance information from the BTSs 26 and supply it (i.e., the distance information) to the PLC 38, where it is processed in order to determine location of each mobile station under analysis. *Col. 4, lines 60-63.* Applicants respectfully submit that this clearly indicates that distance estimation or calculation is not made by either the MMSUs 36 or the PLC 38.

Thus, neither MMSU 36 or PLC 38, alone or in combination, provide the distance unit required by Claim 31.

Moreover, Applicants cannot find, and the Examiner has not cited, any other teaching or suggestion within Innes of a distance unit as required by Claim 31. Applicants only find that the determination or calculation of distance is referenced generally in relation to BTS 26. *Col. 3, line 38 - Col. 4, line 37.*

Applicants respectfully submit that Innes fails to disclose or suggest a distance unit as required by Claim 31.

This deficiency of Innes notwithstanding, the Examiner goes on to suggest that Innes discloses "obtaining a two way travel (sic), wherein the two way travel time is a time of travel for a range signal to travel from the base station to the mobile station and to travel from the mobile station to the base station" and "determining a one way travel time ... of a signal from said base station to said mobile station."

However, Claim 31 requires that a distance unit: adjusts a value of the two way travel time to correct for signal conditions causing a time difference in arrival of the range signal at the base station; and determines a one way travel time *D* by subtracting a random backoff parameter from the adjusted two way travel time, and dividing that result by 2.

With respect to these requirements of Claim 31, the Examiner has conceded the deficiencies of Innes, and the combination of Innes with the Admitted Prior Art - "Innes et al. fails to specifically disclose that the delay (σ) is a random backoff ... as defined by applicant."; "Innes et al. and the Admitted Prior Art fail to specifically disclose that the distance unit is capable of adjusting a value of the travel time to correct for signal conditions causing a time difference in arrival of the range signal at the base station, as claimed."

Applicants agree that "Innes et al. fails to specifically disclose that the delay (σ) is a random backoff ... as defined by applicant."

Applicants find that Innes discloses a known fixed delay of period (σ), which is equivalent to 1.73076 ms. *Col. 4, lines 6 - 8.*

In an attempt to remedy this deficiency of Innes, the Examiner suggests that "it would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace Innes et al.'s GSM delay σ by IS-95 CDMA standard's random backoff parameter", claiming that "Following Innes et al.'s suggestion of applying their invention to a CDMA cellular mobile radio system, such as IS-95 CDMA, one of ordinary skill in the art would easily recognize that Innes et al.'s delay σ would be the counterpart of IS-95 CDMA standard's random backoff parameter."

Applicants respectfully traverse the Examiner's interpretation of Innes, and conclusory remarks concerning motivation or suggestion found in Innes.

Applicants find that Innes discloses that its invention is also applicable to other types of cellular mobile radio systems, including CDMA and TDMA. *Col. 5, lines 65 - 67.* With respect to CDMA, Innes briefly references a CDMA "soft hand-off" during which an MS is linked with two or more BTSs. *Col. 6, lines 3-7.* Innes then teaches that "Position location can therefore

advantageously take place when the MS is in communication with two or more BTSs at the time of such a soft hand-off." *Col. 6, lines 7-10.*

Innes does not specifically reference IS-95 CDMA. Innes does not teach or suggest any modification of its methods or calculations to utilize alternative parameters as defined by a CDMA standard; much less utilize alternative parameters as defined by the IS-95 CDMA standard; still much less utilize only a single, random parameter defined by the IS-95 CDMA standard as a replacement for its known fixed delay of period (σ).

Applicants respectfully submit that, in order to selectively combine a single parameter of the Admitted Prior Art with the teachings of Innes, one of ordinary skill in the art would have to: 1) find, read and understand Innes' disclosure of a position location system, described extensively in reference to a GSM-based network; 2) read Innes' general suggestion that its invention may be applied to a CDMA type of system, and decide to apply to such a system; 3) read Innes' brief suggestion that its position location may advantageously take place during a CDMA "soft hand-off"; 4) spontaneously decided or assume that, despite no teaching or suggestion of modifying its position location scheme, Innes' system nevertheless needs to be modified to perform its position location during a CDMA "soft hand-off"; 5) spontaneously decide or assume that only a single element of Innes' distance calculation scheme - a known fixed delay of period (σ) - needs to be modified; 6) decide upon or find the IS-95 CDMA standard; 7) selectively cull from the IS-95 CDMA standard only the random backoff parameter; 8) disregard Innes' teaching of a known fixed delay of period (σ), and its calculation assumptions based upon that known fixed period; 9) replace Innes' known fixed delay of period (σ) with IS-95's random backoff parameter; and 10) modify Innes' system, assumptions and calculations to generate a random backoff parameter and calculate distance using that random backoff parameter.

Applicants respectfully submit that Innes provides no teaching or motivation sufficient to motivate one of ordinary skill in the art to undertake such a highly selective and speculative process.

Moreover, even if one of ordinary skill did undertake such a selective modification process, and it was - somehow - successful, the resulting combination of Innes and the Admitted Prior Art

still "fail(s) to specifically disclose that the distance unit is capable of adjusting a value of the travel time to correct for signal conditions causing a time difference in arrival of the range signal at the base station," as conceded by the Examiner.

Despite the fact that Innes appears to contain no teaching or suggestion of why to adjust a two-way travel time, or how to do it, the Examiner nevertheless spontaneously turns to Bevan to selectively cull from it only its "method and apparatus for adjusting a value of travel time to correct for signal conditions causing a time difference in arrival of the range signal at the base station" - alleging that "it would have been obvious to a person of ordinary skill in the art at the time the invention was made to adjust the value of the two way travel time to correct for signal conditions causing a time difference in the arrival of the range signal at the base station, in order to achieve accurate and precise positioning of mobile wireless receivers ... as suggested by Bevan et al."

Applicants respectfully disagree with the Examiner's suggested reconstruction. Applicant further submits that the Examiner improperly relies upon Bevan for the motivation to combine when - in the absence of suggestion or motivation to combine in Innes - one of ordinary skill in the art would not even be prompted to look for Bevan.

Applicants find that Bevan discloses a system in which the position of a mobile station with respect to a base station is evaluated using direction finding (DF) techniques to determine the bearing or direction of the mobile station, and round trip delay (RTD) techniques to determine the range or distance of the mobile station from the base station. *Col. 3, lines 52-57.*

Bevan determines the bearing of the mobile station relative to the base station by determining the direction from which the mobile station's signal is received. *Col. 3, line 62 - Col. 4, line 21; Fig. 1.* Bevan discloses a DF processor architecture for mathematically processing signals received at a direction finding antenna. *Col. 6, line 28 - Col. 7, line 35; Fig. 3.* Bevan notes that with any radio-based direction-finding system, there are several mechanisms for potential errors in attempting to estimate the angle of arrival (i.e., bearing or direction) and range (i.e., distance) of received signal sources. *Col. 1, lines 40 -43.* Bevan goes on to list a general reference to error mechanisms in

measuring signal round-trip delay (RTD), in distinction and addition to: noise/interference, multipath (angle and delay spread), Doppler, and calibration errors. *Col. 1, lines 44 - 50.*

The remainder of Bevan extensively addresses Doppler errors and calibration errors in the direction finding (DF) process. *Col. 6, lines 17 - 28.*

Other than a brief acknowledgment of their existence in Col. 1, Bevan does not address "error mechanisms in measuring signal round-trip delay (RTD)." Bevan does not disclose or suggest adjusting the value of a two way travel time.

Thus, in order to selectively combine Innes, the Admitted Prior Art, and Bevan as the Examiner has suggested, one of ordinary skill in the art would have to: 1) spontaneously decide or assume that - despite the fact that Innes fails to teach or suggest the adjustment of a two-way travel time - the highly selective combination of Innes and the Admitted Prior Art nevertheless needs to adjust its two-way travel time; 2) seek out and find the Bevan reference; 3) disregard Bevan's extensive teaching on overcoming Doppler effect and calibration errors in direction finding (DF) processes; 4) focus solely on a single, general reference in Bevan to "error mechanisms in measuring signal round-trip delay (RTD)"; and 5) spontaneously created and modify structures, methods and operations of the Innes system to add functionality to adjust a value of a two way travel time to correct for signal conditions causing a time difference in arrival of a range signal at a base station.

Applicants respectfully submit that, without the benefit of hindsight reconstruction, Innes provides no teaching or motivation sufficient to motivate one of ordinary skill in the art to undertake a second such highly selective and speculative process.

Even if one of ordinary skill did undertake two such spontaneous and selective modification processes, and they were - somehow - successful, the resulting combination of Innes, the Admitted Prior Art, and Bevan still fails to provide all of the elements required by Claim 31.

Applicants submit that claim 31 overcomes the Examiner's rejection and is allowable. Applicants therefore respectfully request allowance of claim 31 and reversal of the Examiner's rejection.

Claim 32

Claim 32 depends from allowable claim 31, so the arguments above with respect to claim 31 apply here, and these arguments are incorporated herein by reference.

Claim 32 further requires "wherein said distance unit is capable of adjusting said value of said two way travel time to correct a time difference of a multipath signal."

Applicants respectfully traverse the Examiner's claim that "Innes teaches that the distance unit is capable of adjusting the value of the two-way travel time to correct a time difference of a multipath or a Doppler shifted signal." Applicants find no such disclosure in Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 32 and reversal of the Examiner's rejections.

Claim 33

Claim 33 depends from allowable claim 31, so the arguments above with respect to claim 31 apply here, and these arguments are incorporated herein by reference.

Claim 33 further requires "wherein said distance unit is capable of adjusting said value of said two way travel time to correct a time difference of a Doppler shifted signal."

Applicants respectfully traverse the Examiner's claim that "Innes teaches that the distance unit is capable of adjusting the value of the two-way travel time to correct a time difference of a multipath or a Doppler shifted signal." Applicants find no such disclosure in Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 33 and reversal of the Examiner's rejections.

Claim 34

Claim 34 depends from allowable claim 31, so the arguments above with respect to claim 31 apply here, and these arguments are incorporated herein by reference.

Claim 34 further requires "wherein said distance unit is capable of obtaining said two way travel time by subtracting an arrival time of said range signal at said base station from said mobile station from a transmission time of said range signal from said base station to said mobile station."

Applicants respectfully traverse the Examiner's contentions regarding the disclosure of Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 34 and reversal of the Examiner's rejections.

Claim 35

Claim 35 depends from allowable claim 31, so the arguments above with respect to claim 31 apply here, and these arguments are incorporated herein by reference.

Claim 35 further requires "wherein said random backoff parameter for said mobile station has a chip length value between zero chip lengths and five hundred eleven chip lengths."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 35 and reversal of the Examiner's rejections.

Claim 36

Claim 36 depends from allowable claim 35, so the arguments above with respect to claims 31 and 35 apply here, and these arguments are incorporated herein by reference.

Claim 36 further requires "wherein a time value for one chip length value is eight hundred thirteen and eight tenths nanoseconds."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 36 and reversal of the Examiner's rejections.

Claim 37

Claim 37 depends from allowable claim 31, so the arguments above with respect to claim 31 apply here, and these arguments are incorporated herein by reference.

Claim 37 further requires "wherein said distance unit is capable of obtaining a distance from said base station to said mobile station with a distance resolution of approximately two hundred forty four meters."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 37 and reversal of the Examiner's rejections.

Claim 38

The Examiner has rejected claim 38 under the same rationale as the rejection of claim 31.

Thus, the arguments above with respect to claim 31 apply here, and these arguments are incorporated herein by reference

Applicants respectfully request allowance of claim 38 and reversal of the Examiner's rejections.

Claim 39

Claim 39 depends from allowable claim 38, so the arguments above with respect to claim 38 apply here, and these arguments are incorporated herein by reference.

Claim 39 further requires "wherein said distance unit is capable of adjusting said value of said two way travel time to correct a time difference of a multipath signal."

Applicants respectfully traverse the Examiner's claim that "Innes teaches that the distance unit is capable of adjusting the value of the two-way travel time to correct a time difference of a multipath or a Doppler shifted signal." Applicants find no such disclosure in Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 39 and reversal of the Examiner's rejections.

Claim 40

Claim 40 depends from allowable claim 38, so the arguments above with respect to claim 38 apply here, and these arguments are incorporated herein by reference.

Claim 40 further requires "wherein said distance unit is capable of adjusting said value of said two way travel time to correct a time difference of a Doppler shifted signal."

Applicants respectfully traverse the Examiner's claim that "Innes teaches that the distance unit is capable of adjusting the value of the two-way travel time to correct a time difference of a multipath or a Doppler shifted signal." Applicants find no such disclosure in Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 40 and reversal of the Examiner's rejections.

Claim 41

Claim 41 depends from allowable claim 38, so the arguments above with respect to claim 38 apply here, and these arguments are incorporated herein by reference.

Claim 41 further requires "wherein said distance unit is capable of obtaining said two way travel time by subtracting an arrival time of said range signal at said base station from said mobile station from a transmission time of said range signal from said base station to said mobile station."

Applicants respectfully traverse the Examiner's contentions regarding the disclosure of Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 41 and reversal of the Examiner's rejections.

Claim 42

Claim 42 depends from allowable claim 38, so the arguments above with respect to claim 38 apply here, and these arguments are incorporated herein by reference.

Claim 42 further requires "wherein said random backoff parameter for said mobile station has a chip length value between zero chip lengths and five hundred eleven chip lengths."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 42 and reversal of the Examiner's rejections.

Claim 43

Claim 43 depends from allowable claim 42, so the arguments above with respect to claims 42 and 38 apply here, and these arguments are incorporated herein by reference.

Claim 43 further requires "wherein a time value for one chip length value is eight hundred thirteen and eight tenths nanoseconds."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 43 and reversal of the Examiner's rejections.

Claim 44

Claim 44 depends from allowable claim 38, so the arguments above with respect to claim 38 apply here, and these arguments are incorporated herein by reference.

Claim 44 further requires "wherein said distance unit is capable of obtaining a distance from said base station to said mobile station with a distance resolution of approximately two hundred forty four meters."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 44 and reversal of the Examiner's rejections.

Claim 45

The Examiner has rejected claim 45 under the same rationale as the rejection of claim 31.

Thus, the arguments above with respect to claim 31 apply here, and these arguments are incorporated herein by reference

Applicants respectfully request allowance of claim 45 and reversal of the Examiner's rejections.

Claim 46

Claim 46 depends from allowable claim 45, so the arguments above with respect to claim 45 apply here, and these arguments are incorporated herein by reference.

Claim 46 further requires "wherein the step of adjusting the value of the two way travel time adjusts the two way travel time to correct a time difference of a multipath signal."

Applicants respectfully traverse the Examiner's claim that "Innes teaches that the distance unit is capable of adjusting the value of the two-way travel time to correct a time difference of a multipath or a Doppler shifted signal." Applicants find no such disclosure in Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 46 and reversal of the Examiner's rejections.

Claim 47

Claim 47 depends from allowable claim 45, so the arguments above with respect to claim 45 apply here, and these arguments are incorporated herein by reference.

Claim 47 further requires "wherein the step of adjusting the value of the two way travel time adjusts the two way travel time to correct a time difference of a Doppler shifted signal."

Applicants respectfully traverse the Examiner's claim that "Innes teaches that the distance unit is capable of adjusting the value of the two-way travel time to correct a time difference of a multipath or a Doppler shifted signal." Applicants find no such disclosure in Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 47 and reversal of the Examiner's rejections.

Claim 48

Claim 48 depends from allowable claim 45, so the arguments above with respect to claim 45 apply here, and these arguments are incorporated herein by reference.

Claim 48 further requires "wherein the step of obtaining a two way travel time obtains the two way travel time by subtracting an arrival time of the range signal at the base station from the mobile station from a transmission time of the range signal from the base station to the mobile station."

Applicants respectfully traverse the Examiner's contentions regarding the disclosure of Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 48 and reversal of the Examiner's rejections.

Claim 49

Claim 49 depends from allowable claim 45, so the arguments above with respect to claim 45 apply here, and these arguments are incorporated herein by reference.

Claim 49 further requires "wherein the random backoff parameter for said mobile station has a chip length value between zero chip lengths and five hundred eleven chip lengths."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 49 and reversal of the Examiner's rejections.

Claim 50

Claim 50 depends from allowable claim 49, so the arguments above with respect to claims 49 and 45 apply here, and these arguments are incorporated herein by reference.

Claim 50 further requires "wherein a time value for one chip length value is eight hundred thirteen and eight tenths nanoseconds."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 50 and reversal of the Examiner's rejections.

Claim 51

Claim 51 depends from allowable claim 45, so the arguments above with respect to claim 45 apply here, and these arguments are incorporated herein by reference.

Claim 51 further requires "obtaining with the distance unit a distance from the base station to the mobile station with a distance resolution of approximately two hundred forty four meters."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 51 and reversal of the Examiner's rejections.

Claim 52

Claim 52 depends from claim 45, so the arguments above with respect to claim 45 apply here, and these arguments are incorporated herein by reference.

Claim 52 further requires "wherein the distance unit determines a distance from the base station to the mobile station in less than ten seconds."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of the speed thereof. The Examiner admits that Innes et al., the Admitted Prior Art, and Bevan et al. "fail to explicitly mention to determine the distance from the base station to the mobile station in less than ten seconds."

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 52 and reversal of the Examiner's rejections.

Claim 53

Claim 53 requires, among other limitations, a distance unit associated with each of three base stations, capable of obtaining a two way travel time - a time of travel for a range signal to travel from each respective base station to a mobile station and to travel from the mobile station to each respective base station. The value of each two way travel time is adjusted to correct for signal conditions causing a time difference in arrival of each range signal at the respective base station. A one way travel time *D* from each respective base station is calculated by subtracting a random backoff parameter from the adjusted two way travel time, and dividing that result by 2. Each respective one way travel time *D* is multiplied by the speed of light to obtain the distance between each respective base station and mobile station. The location of the mobile station within the area between the three base stations is identified using the respective distances between the mobile station and the three base stations.

Applicants respectfully submit that - absent a highly selective and speculative hindsight reconstruction - the cited references do not to teach or suggest, alone or in proper combination, a distance unit associated with each base station and all the required operational elements of Claim 53.

The Examiner suggests "MMSU 36 and/or PLC 38" suffices as the distance unit required by Claim 53. Applicants respectfully traverse the Examiner's interpretation of Innes.

Applicants find that Innes discloses one or more message monitoring and substitution units (MMSUs) 36, placed in the Abis interface 28 between each BTS 26 and its BSC 24. *Col. 4, lines 45-47; Fig. 4.* Innes discloses a separate position location controller ("PLC") 38 that controls the MMSUs 36. *Col. 4, lines 47-48; Fig. 4.* The PLC 38 and MMSUs 36 may be integrated with, or separate from, the base transceiver station (BTS) 26 and base station controller (BSC) 24 components. *Col. 4, lines 48-50; Fig. 4.*

Importantly, the MMSUs 36 collect the distance information from the BTSs 26 and supply it (i.e., the distance information) to the PLC 38, where it is processed in order to determine location of each mobile station under analysis. *Col. 4, lines 60-63.* Applicants respectfully submit that this

clearly indicates that distance estimation or calculation is not made by either the MMSUs 36 or the PLC 38.

Thus, neither MMSU 36 or PLC 38, alone or in combination, provide the distance unit required by Claim 53.

Moreover, Applicants cannot find, and the Examiner has not cited, any other teaching or suggestion within Innes of a distance unit as required by Claim 53. Applicants only find that the determination or calculation of distance is referenced generally in relation to BTS 26. *Col. 3, line 38 - Col. 4, line 37.*

Applicants respectfully submit that Innes fails to disclose or suggest a distance unit associated with each base station as required by Claim 53.

This deficiency of Innes notwithstanding, the Examiner goes on to suggest that Innes discloses "obtaining a two way travel (sic), wherein the two way travel time is a time of travel for a range signal to travel from the base station to the mobile station and to travel from the mobile station to the base station" and "determining a one way travel time ... of a signal from said base station to said mobile station."

However, Claim 53 requires: adjusting a value of each respective two way travel time to correct for signal conditions causing a time difference in arrival of each range signal at the respective base station; and calculates a one way travel time *D* from each respective base station to the mobile station by subtracting a random backoff parameter from the adjusted two way travel time, and dividing that result by 2.

With respect to these requirements of Claim 53, the Examiner has conceded the deficiencies of Innes, and the combination of Innes with the Admitted Prior Art - "Innes et al. fails to specifically disclose that the delay (σ) is a random backoff ... as defined by applicant."; "Innes et al. and the Admitted Prior Art fail to specifically disclose that the distance unit is capable of adjusting a value of the travel time to correct for signal conditions causing a time difference in arrival of the range signal at the base station, as claimed."

Applicants agree that "Innes et al. fails to specifically disclose that the delay (σ) is a random backoff ... as defined by applicant."

Applicants find that Innes discloses a known fixed delay of period (σ), which is equivalent to 1.73076 ms. *Col. 4, lines 6 - 8.*

In an attempt to remedy this deficiency of Innes, the Examiner suggests that "it would have been obvious to a person of ordinary skill in the art at the time the invention was made to replace Innes et al.'s GSM delay σ by IS-95 CDMA standard's random backoff parameter", claiming that "Following Innes et al.'s suggestion of applying their invention to a CDMA cellular mobile radio system, such as IS-95 CDMA, one of ordinary skill in the art would easily recognize that Innes et al.'s delay σ would be the counterpart of IS-95 CDMA standard's random backoff parameter."

Applicants respectfully traverse the Examiner's interpretation of Innes, and conclusory remarks concerning motivation or suggestion found in Innes.

Applicants find that Innes discloses that its invention is also applicable to other types of cellular mobile radio systems, including CDMA and TDMA. *Col. 5, lines 65 - 67.* With respect to CDMA, Innes briefly references a CDMA "soft hand-off" during which an MS is linked with two or more BTSs. *Col. 6, lines 3-7.* Innes then teaches that "Position location can therefore advantageously take place when the MS is in communication with two or more BTSs at the time of such a soft hand-off." *Col. 6, lines 7-10.*

Innes does not specifically reference IS-95 CDMA. Innes does not teach or suggest any modification of its methods or calculations to utilize alternative parameters as defined by a CDMA standard; much less utilize alternative parameters as defined by the IS-95 CDMA standard; still much less utilize only a single, random parameter defined by the IS-95 CDMA standard as a replacement for its known fixed delay of period (σ).

Applicants respectfully submit that, in order to selectively combine a single parameter of the Admitted Prior Art with the teachings of Innes, one of ordinary skill in the art would have to: 1) find, read and understand Innes' disclosure of a position location system, described extensively in reference to a GSM-based network; 2) read Innes' general suggestion that its invention may be

applied to a CDMA type of system, and decide to apply to such a system; 3) read Innes' brief suggestion that its position location may advantageously take place during a CDMA "soft hand-off"; 4) spontaneously decided or assume that, despite no teaching or suggestion of modifying its position location scheme, Innes' system nevertheless needs to be modified to perform its position location during a CDMA "soft hand-off"; 5) spontaneously decide or assume that only a single element of Innes' distance calculation scheme - a known fixed delay of period (σ) - needs to be modified; 6) decide upon or find the IS-95 CDMA standard; 7) selectively cull from the IS-95 CDMA standard only the random backoff parameter; 8) disregard Innes' teaching of a known fixed delay of period (σ), and its calculation assumptions based upon that known fixed period; 9) replace Innes' known fixed delay of period (σ) with IS-95's random backoff parameter; and 10) modify Innes' system, assumptions and calculations to generate a random backoff parameter and calculate distance using that random backoff parameter.

Applicants respectfully submit that Innes provides no teaching or motivation sufficient to motivate one of ordinary skill in the art to undertake such a highly selective and speculative process.

Moreover, even if one of ordinary skill did undertake such a selective modification process, and it was - somehow - successful, the resulting combination of Innes and the Admitted Prior Art still "fail(s) to specifically disclose that the distance unit is capable of adjusting a value of the travel time to correct for signal conditions causing a time difference in arrival of the range signal at the base station," as conceded by the Examiner.

Despite the fact that Innes appears to contain no teaching or suggestion of why to adjust a two-way travel time, or how to do it, the Examiner nevertheless spontaneously turns to Bevan to selectively cull from it only its "method and apparatus for adjusting a value of travel time to correct for signal conditions causing a time difference in arrival of the range signal at the base station" - alleging that "it would have been obvious to a person of ordinary skill in the art at the time the invention was made to adjust the value of the two way travel time to correct for signal conditions causing a time difference in the arrival of the range signal at the base station, in order to achieve accurate and precise positioning of mobile wireless receivers ... as suggested by Bevan et al."

Applicants respectfully disagree with the Examiner's suggested reconstruction. Applicant further submits that the Examiner improperly relies upon Bevan for the motivation to combine when - in the absence of suggestion or motivation to combine in Innes - one of ordinary skill in the art would not even be prompted to look for Bevan.

Applicants find that Bevan discloses a system in which the position of a mobile station with respect to a base station is evaluated using direction finding (DF) techniques to determine the bearing or direction of the mobile station, and round trip delay (RTD) techniques to determine the range or distance of the mobile station from the base station. *Col. 3, lines 52-57.*

Bevan determines the bearing of the mobile station relative to the base station by determining the direction from which the mobile station's signal is received. *Col. 3, line 62 - Col. 4, line 21; Fig. 1.* Bevan discloses a DF processor architecture for mathematically processing signals received at a direction finding antenna. *Col. 6, line 28 - Col. 7, line 35; Fig. 3.* Bevan notes that with any radio-based direction-finding system, there are several mechanisms for potential errors in attempting to estimate the angle of arrival (i.e., bearing or direction) and range (i.e., distance) of received signal sources. *Col. 1, lines 40 -43.* Bevan goes on to list a general reference to error mechanisms in measuring signal round-trip delay (RTD), in distinction and addition to: noise/interference, multipath (angle and delay spread), Doppler, and calibration errors. *Col. 1, lines 44 - 50.*

The remainder of Bevan extensively addresses Doppler errors and calibration errors in the direction finding (DF) process. *Col. 6, lines 17 - 28.*

Other than a brief acknowledgment of their existence in Col. 1, Bevan does not address "error mechanisms in measuring signal round-trip delay (RTD)." Bevan does not disclose or suggest adjusting the value of a two way travel time.

Thus, in order to selectively combine Innes, the Admitted Prior Art, and Bevan as the Examiner has suggested, one of ordinary skill in the art would have to: 1) spontaneously decide or assume that - despite the fact that Innes fails to teach or suggest the adjustment of a two-way travel time - the highly selective combination of Innes and the Admitted Prior Art nevertheless needs to adjust its two-way travel time; 2) seek out and find the Bevan reference; 3) disregard Bevan's

extensive teaching on overcoming Doppler effect and calibration errors in direction finding (DF) processes; 4) focus solely on a single, general reference in Bevan to "error mechanisms in measuring signal round-trip delay (RTD)"; and 5) spontaneously created and modify structures, methods and operations of the Innes system to add functionality to adjust a value of a two way travel time to correct for signal conditions causing a time difference in arrival of a range signal at a base station.

Applicants respectfully submit that, without the benefit of hindsight reconstruction, Innes provides no teaching or motivation sufficient to motivate one of ordinary skill in the art to undertake a second such highly selective and speculative process.

Even if one of ordinary skill did undertake two such spontaneous and selective modification processes, and they were - somehow - successful, the resulting combination of Innes, the Admitted Prior Art, and Bevan still fails to provide all of the elements required by Claim 53.

Applicants submit that claim 53 overcomes the Examiner's rejection and is allowable. Applicants therefore respectfully request allowance of claim 53 and reversal of the Examiner's rejection.

Claim 54

Claim 54 depends from allowable claim 53, so the arguments above with respect to claim 54 apply here, and these arguments are incorporated herein by reference.

Claim 54 further requires "wherein the step of adjusting the value of each respective two way travel time adjusts each respective two way travel time to correct a time difference of a signal comprising one of a multipath signal and a Doppler shifted signal."

Applicants respectfully traverse the Examiner's claim that "Innes teaches that the distance unit is capable of adjusting the value of the two-way travel time to correct a time difference of a multipath or a Doppler shifted signal." Applicants find no such disclosure in Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 54 and reversal of the Examiner's rejections.

Claim 55

Claim 55 depends from allowable claim 53, so the arguments above with respect to claim 53 apply here, and these arguments are incorporated herein by reference.

Claim 55 further requires "wherein the step of identifying the location of the mobile station within the area between the three base stations comprises the steps of: providing the respective distances of said mobile station from the three base stations to a calculator unit not located within the three base stations; and calculating in said calculator unit a location of said mobile station from said respective distances of said mobile station from the three base stations."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Importantly, Applicants note that the Examiner contends that Innes discloses "a calculator unit (PLC 38) not located within the three base stations." This seems to directly contradict the Examiner's earlier assertion that equated PLC 38 with a distance unit associated with a base station.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 55 and reversal of the Examiner's rejections.

Claim 56

The Examiner has rejected claim 56 under the same rationale as the rejection of claim 53.

Thus, the arguments above with respect to claim 53 apply here, and these arguments are incorporated herein by reference

Applicants respectfully request allowance of claim 56 and reversal of the Examiner's rejections.

Claim 57

Claim 57 depends from allowable claim 56, so the arguments above with respect to claim 57 apply here, and these arguments are incorporated herein by reference.

Claim 57 further requires "wherein said distance unit is capable of adjusting said value of each respective two way travel time to correct a time difference of a signal comprising one of a multipath signal and a Doppler shifted signal."

Applicants respectfully traverse the Examiner's claim that "Innes teaches that the distance unit is capable of adjusting the value of the two-way travel time to correct a time difference of a multipath or a Doppler shifted signal." Applicants find no such disclosure in Innes.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 57 and reversal of the Examiner's rejections.

Claim 58

Claim 58 depends from allowable claim 56, so the arguments above with respect to claim 56 apply here, and these arguments are incorporated herein by reference.

Claim 58 further requires "wherein said location of said mobile station within said area between said three base stations has a distance resolution of approximately two hundred forty four meters."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes, the Admitted Prior Art, and Bevan, and the obviousness of selectively combining those references.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not to teach or suggest the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 58 and reversal of the Examiner's rejections.

Claim 59

Claim 59 depends from allowable claim 56, so the arguments above with respect to claim 56 apply here, and these arguments are incorporated herein by reference.

Claim 59 further requires "wherein said distance unit is capable of calculating a location of said mobile station from said respective distances of said mobile station from said three base stations."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes and the Admitted Prior Art, and the obviousness of selectively combining Innes and the Admitted Prior Art.

Importantly, Applicants note that the Examiner contends that Innes discloses "a calculator unit (PLC 38) not located within the three base stations." This seems to directly contradict the Examiner's earlier assertion that equated PLC 38 with a distance unit associated with a base station.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 59 and reversal of the Examiner's rejections.

Claim 60

Claim 60 depends from allowable claim 56, so the arguments above with respect to claim 56 apply here, and these arguments are incorporated herein by reference.

Claim 60 further requires "a calculator unit coupled to said three base stations but not located within said three base stations, said calculator unit capable of receiving from said three base stations

said respective distances of said mobile station from said three base stations; wherein said calculator unit is capable of calculating a location of said mobile station from said respective distances of said mobile station from said three base stations."

Applicants respectfully traverse the Examiner's contentions regarding the disclosures of Innes, the Admitted Prior Art, and Bevan, and the obviousness of selectively combining those references.

Importantly, Applicants note that the Examiner appears to contend that Innes discloses "a calculator unit (PLC 38) not located within the three base stations." This seems to directly contradict the Examiner's earlier assertion that equated PLC 38 with a distance unit associated with a base station.

Innes, the Admitted Prior Art, and Bevan, or any combination of them, do not appear to teach the elements as described with relation to all other elements of this and the parent claim.

Applicants respectfully request allowance of claim 60 and reversal of the Examiner's rejections.

Therefore, Claims 31-60 should be allowed over the cited combination Innes, the Admitted Prior Art, and Bevan; and the Examiner's obviousness rejections should be reversed.

Grouping of Claims

The claims on appeal do not stand or fall together, as may be seen from the arguments set forth above. Each claim has been argued separately under a separate subheading, and each claim should be considered separately. While the applicant recognizes that a formal statement regarding the grouping of claims is no longer required, each claim should be considered separately; or at the very least each claim which is argued separately in the preceding sections of this brief should be considered separately. Argument: The fact that the claims use different formulations (as detailed above) and/or have been argued separately, shows that, if their patentability is not considered separately, any adverse decision would show that the limitations of some claims had been unfairly ignored.

REMARKS CONCERNING NOTICE OF NON-COMPLIANCE

In the Notification of Non-Compliant Appeal Brief mailed May 16, 2006, the Examiner states that a statement of the status of claims 1-30 is missing from the Status of Claims section. Applicants have amended the Status of Claims section to correct this unintentional oversight. Applicants respectfully request reconsideration and withdrawal of this objection/rejection.

In the Notification of Non-Compliant Appeal Brief mailed May 16, 2006, the Examiner states that the brief does not contain a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings, if any, by reference characters.

Applicants respectfully disagree, and draw the Examiner's attention to the Summary of Claimed Subject Matter section, beginning on page 1 of this Appeal Brief as it was originally filed. This section begins with a general description of the claimed subject matter, including references to page and line numbers, as well as drawing reference numbers for features repeated throughout the independent claims. Following the general description, a concise explanation of the subject matter

of each independent claim is provided, including appropriate references to the specification. The explanation of independent claim 31 begins on page 2 of the brief. The explanation of independent claim 38 begins on page 3 of the brief. The explanation of independent claim 45 begins on page 3 of the brief. The explanation of independent claim 53 begins on page 4 of the brief. The explanation of independent claim 56 begins on page 5 of the brief. More detailed and specific arguments regarding the allowability of each independent claim are addressed - in sequential order with the dependent claims - in the discussion of Ground of Rejection 1 section, beginning on page 9 of the brief.

Applicants respectfully submit that this portion of the Appeal Brief as originally filed is fully compliant and responsive. Applicants respectfully request reconsideration and withdrawal of this objection/rejection.

In the Notification of Non-Compliant Appeal Brief mailed May 16, 2006, the Examiner states that each and every dependent claim has been argued separately, but a concise explanation has not been provided for all these claims.

Again, applicants respectfully disagree, and draw the Examiner's attention to the explanation for each dependent claim in the Appeal Brief as it was originally filed.

Dependent claim 32 is explained on page 15. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 32 is fully compliant and responsive.

Dependent claim 33 is explained on page 15. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 33 is fully compliant and responsive.

Dependent claim 34 is explained on page 16. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation

thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 34 is fully compliant and responsive.

Dependent claim 35 is explained on page 16. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 35 is fully compliant and responsive.

Dependent claim 36 is explained on page 17. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 36 is fully compliant and responsive.

Dependent claim 37 is explained on page 17. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 37 is fully compliant and responsive.

Dependent claim 39 is explained on page 18. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 39 is fully compliant and responsive.

Dependent claim 40 is explained on page 18. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 40 is fully compliant and responsive.

Dependent claim 41 is explained on page 19. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 41 is fully compliant and responsive.

Dependent claim 42 is explained on page 19. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 42 is fully compliant and responsive.

Dependent claim 43 is explained on page 20. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 43 is fully compliant and responsive.

Dependent claim 44 is explained on page 20. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 43 is fully compliant and responsive.

Dependent claim 46 is explained on page 21. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 46 is fully compliant and responsive.

Dependent claim 47 is explained on page 22. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 47 is fully compliant and responsive.

Dependent claim 48 is explained on page 22. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 48 is fully compliant and responsive.

Dependent claim 49 is explained on page 23. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation

thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 49 is fully compliant and responsive.

Dependent claim 50 is explained on page 23. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 50 is fully compliant and responsive.

Dependent claim 51 is explained on page 24. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 51 is fully compliant and responsive.

Dependent claim 52 is explained on page 24. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 52 is fully compliant and responsive.

Dependent claim 54 is explained on page 30. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 54 is fully compliant and responsive.

Dependent claim 55 is explained on page 31. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 55 is fully compliant and responsive.

Dependent claim 56 is explained on page 31. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 56 is fully compliant and responsive.

Dependent claim 57 is explained on page 32. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 57 is fully compliant and responsive.

Dependent claim 58 is explained on page 32. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 58 is fully compliant and responsive.

Dependent claim 59 is explained on page 33. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 59 is fully compliant and responsive.

Dependent claim 60 is explained on page 33. This explanation contains the claim's relation to its independent claim, and further describes additional requirements or limitations in relation thereto. This explanation further addresses the cited grounds of rejection for the claim. Applicants respectfully submit that this concise explanation of claim 60 is fully compliant and responsive.

Applicants respectfully submit that these portions of the Appeal Brief as originally filed are fully compliant and responsive. Applicants therefore respectfully request reconsideration and withdrawal of these objections/rejections.

Applicants believe that - in light of the amendment(s) made, and the clarifications provided above - all substantive issues in the Notification of Non-Compliant Appeal Brief have been fully and responsively addressed. Applicants therefore respectfully request reconsideration and withdrawal of the Notification of Non-Compliant Appeal Brief.

REQUESTED RELIEF

The Board is respectfully requested to reverse the outstanding rejections and return this application to the Examiner for allowance.

Respectfully submitted,

MUNCK BUTRUS, P.C.

Date: 24 May 2006

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:	Purva R. Rajkotia
U.S. Serial No.:	10/028,571
Filed:	December 20, 2001
For:	SYSTEM AND METHOD FOR LOCATING A MOBILE STATION IN A WIRELESS NETWORK
Group No.:	2687
Examiner:	Eliseo Ramos-Feliciano

APPENDIX A -

Claims Appendix

1-30. (Canceled).

31. (Previously Presented)

For use in wireless network communications system comprising a plurality of base stations and a plurality of mobile stations, an apparatus for determining a distance from a base station to a mobile station, said apparatus comprising:

a distance unit associated with said base station wherein said distance unit is capable of

obtaining a two way travel time, wherein said two way travel time is a time of travel for a range signal to travel from said base station to said mobile station and to travel from said mobile station to said base station,

adjusting a value of said two way travel time to correct for signal conditions causing a time difference in arrival of said range signal at said base station,

determining a one way travel time D from:

$D = \frac{1}{2}$ *[(adjusted two way travel time) - (random backoff)]*

wherein said random backoff is a time value of a chip length of a random backoff parameter of said mobile station, and

multiplying said one way travel time D by the speed of light to obtain said distance from said base station to said mobile station.

32. (Previously Presented) The apparatus as set forth in Claim 31 wherein said distance unit is capable of adjusting said value of said two way travel time to correct a time difference of a multipath signal.

33. (Previously Presented) The apparatus as set forth in Claim 31 wherein said distance unit is capable of adjusting said value of said two way travel time to correct a time difference of a Doppler shifted signal.

34. (Previously Presented) The apparatus as set forth in Claim 31 wherein said distance unit is capable of obtaining said two way travel time by subtracting an arrival time of said range

signal at said base station from said mobile station from a transmission time of said range signal from said base station to said mobile station.

35. (Previously Presented) The apparatus as set forth in Claim 31 wherein said random backoff parameter for said mobile station has a chip length value between zero chip lengths and five hundred eleven chip lengths.

36. (Previously Presented) The apparatus as set forth in Claim 35 wherein a time value for one chip length value is eight hundred thirteen and eight tenths nanoseconds.

37. (Previously Presented) The apparatus as set forth in Claim 31 wherein said distance unit is capable of obtaining a distance from said base station to said mobile station with a distance resolution of approximately two hundred forty four meters.

38. (Previously Presented) A wireless network communications system comprising a base station and a mobile station, said base station comprising an apparatus for determining a distance from said base station to said mobile station, said apparatus comprising:

a distance unit associated with said base station wherein said distance unit is capable of

obtaining a two way travel time, wherein said two way travel time is a time of travel for a range signal to travel from said base station to said mobile station and to travel from said mobile station to said base station,

adjusting a value of said two way travel time to correct for signal conditions causing a time difference in arrival of said range signal at said base station,

determining a one way travel time D from:

$D = \frac{1}{2}$ *[(adjusted two way travel time) - (random backoff)]*

wherein said random backoff is a time value of a chip length of a random backoff parameter of said mobile station, and

multiplying said one way travel time D by the speed of light to obtain said distance from said base station to said mobile station.

39. (Previously Presented) The apparatus as set forth in Claim 38 wherein said distance unit is capable of adjusting said value of said two way travel time to correct a time difference of a multipath signal.

40. (Previously Presented) The apparatus as set forth in Claim 38 wherein said distance unit is capable of adjusting said value of said two way travel time to correct a time difference of a Doppler shifted signal.

41. (Previously Presented) The apparatus as set forth in Claim 38 wherein said distance unit is capable of obtaining said two way travel time by subtracting an arrival time of said range signal at said base station from said mobile station from a transmission time of said range signal from said base station to said mobile station.

42. (Previously Presented) The apparatus as set forth in Claim 38 wherein said random backoff parameter for said mobile station has a chip length value between zero chip lengths and five hundred eleven chip lengths.

43. (Previously Presented) The apparatus as set forth in Claim 42 wherein a time value for one chip length value is eight hundred thirteen and eight tenths nanoseconds.

44. (Previously Presented) The apparatus as set forth in Claim 38 wherein said distance unit is capable of obtaining a distance from said base station to said mobile station with a distance resolution of approximately two hundred forty four meters.

45. (Previously Presented) For use in wireless network communications system comprising a base station and a mobile station, a method of determining a distance from the base station to the mobile station comprising the steps of:

obtaining with a distance unit associated with the base station a two way travel time, wherein the two way travel time is a time of travel for a range signal to travel from the base station to the mobile station and to travel from the mobile station to the base station;

adjusting a value of the two way travel time to correct for signal conditions causing a time difference in arrival of the range signal at the base station;

calculating a one way travel time D from:

D = ½ [(adjusted two way travel time) - (random backoff)]

wherein said random backoff is a time value of a chip length of a random backoff parameter of the mobile station; and

multiplying the one way travel time D by the speed of light to obtain the distance from the base station to the mobile station.

46. (Previously Presented) The method as set forth in Claim 45 wherein the step of adjusting the value of the two way travel time adjusts the two way travel time to correct a time difference of a multipath signal.

47. (Previously Presented) The method as set forth in Claim 45 wherein the step of adjusting the value of the two way travel time adjusts the two way travel time to correct a time difference of a Doppler shifted signal.

48. (Previously Presented) The method as set forth in Claim 45 wherein the step of obtaining a two way travel time obtains the two way travel time by subtracting an arrival time of the range signal at the base station from the mobile station from a transmission time of the range signal from the base station to the mobile station.

49. (Previously Presented) The method as set forth in Claim 45 wherein the random backoff parameter for the mobile station has a chip length value between zero chip lengths and five

hundred eleven chip lengths.

50. (Previously Presented) The method as set forth in Claim 45 wherein a time value for one chip length value is eight hundred thirteen and eight tenths nanoseconds.

51. (Previously Presented) The method as set forth in Claim 45 further comprising the step of:

obtaining with the distance unit a distance from the base station to the mobile station with a distance resolution of approximately two hundred forty four meters.

52. (Previously Presented) The method as set forth in Claim 45 wherein the distance unit determines a distance from the base station to the mobile station in less than ten seconds.

53. (Previously Presented) For use in wireless network communications system comprising a plurality of base stations and a plurality of mobile stations, a method for locating a mobile station in an area between three base stations, said method comprising the steps of:

obtaining with a distance unit associated with each of the three base stations a two way travel time, wherein the two way travel time is a time of travel for a range signal to travel from each respective base station to the mobile station and to travel from the mobile station to each respective base station;

adjusting a value of each respective two way travel time to correct for signal conditions

causing a time difference in arrival of each range signal at the respective base station;

calculating a one way travel time D from each respective base station to the mobile station where:

$D = \frac{1}{2}$ *[(adjusted two way travel time) - (random backoff)]*

wherein said random backoff is a time value of a chip length of a random backoff parameter of the mobile station;

multiplying each respective one way travel time D by the speed of light to obtain the distance from each respective base station to the mobile station; and

identifying a location of the mobile station within the area between the three base stations using the respective distances of the mobile station from the three base stations.

54. (Previously Presented) The method as set forth in Claim 53 wherein the step of adjusting the value of each respective two way travel time adjusts each respective two way travel time to correct a time difference of a signal comprising one of a multipath signal and a Doppler shifted signal.

55. (Previously Presented) The method as set forth in Claim 53 wherein the step of identifying the location of the mobile station within the area between the three base stations comprises the steps of:

providing the respective distances of said mobile station from the three base stations to a

calculator unit not located within the three base stations; and

calculating in said calculator unit a location of said mobile station from said respective distances of said mobile station from the three base stations.

56. (Previously Presented) For use in wireless network communications system comprising a plurality of base stations and a plurality of mobile stations, an apparatus for locating a mobile station in an area between three base stations, said apparatus comprising:

a distance unit associated with each of said three base stations wherein said distance unit is capable of

obtaining a two way travel time, wherein said two way travel time is a time of travel for a range signal to travel from each respective base station to said mobile station and to travel from said mobile station to each respective base station,

adjusting a value of each respective two way travel time to correct for signal conditions causing a time difference in arrival of each said range signal at each respective base station,

determining a one way travel time D from each respective base station to the mobile station where:

$$D = \frac{1}{2} [(\textit{adjusted two way travel time}) - (\textit{random backoff})]$$

wherein said random backoff is a time value of a chip length of a random backoff parameter of said mobile station,

multiplying each respective one way travel time D by the speed of light to obtain said distance from each respective base station to said mobile station, and

identifying a location of said mobile station within the area between said three base stations using said respective distances of said mobile station from said three base stations.

57. (Previously Presented) The apparatus as set forth in Claim 56 wherein said distance unit is capable of adjusting said value of each respective two way travel time to correct a time difference of a signal comprising one of a multipath signal and a Doppler shifted signal.

58. (Previously Presented) The apparatus as set forth in Claim 56 wherein said location of said mobile station within said area between said three base stations has a distance resolution of approximately two hundred forty four meters.

59. (Previously Presented) The apparatus as set forth in Claim 56 wherein said distance unit is capable of calculating a location of said mobile station from said respective distances of said mobile station from said three base stations.

60. (Previously Presented) The apparatus as set forth in Claim 56 further comprising:

a calculator unit coupled to said three base stations but not located within said three base stations, said calculator unit capable of receiving from said three base stations said respective distances of said mobile station from said three base stations;

wherein said calculator unit is capable of calculating a location of said mobile station from said respective distances of said mobile station from said three base stations.